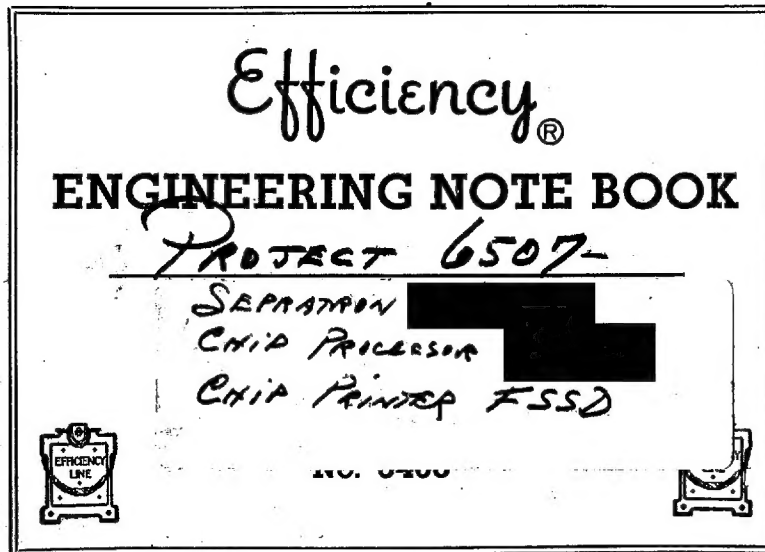


STATINTL

STATINTL



STATINTL

STATINTL


01 - GEA  
02 - TEE  
03 - MATERIALS RATE  
04 - INST (TEAM) / YORK

STATINTL



*Dear Ray:*

STATINTL

*FOLLOWING OUR TELEPHONE CONVERSATION REGARDING THE  
TEST AND EVALUATION OF THE  CHIP PROCESSOR,  
I FORWARDED ON THE 10<sup>TH</sup> OF NOVEMBER 1967 A COPY OF THE PROPOSED  
PROGRAM FOR YOUR APPROVAL.*

*REQUEST CONFIRMATION, COMMENTS OR SUGGESTIONS AT YOUR  
EARLIEST POSSIBLE CONVENIENCE IN ORDER THAT THE PROGRAM BE  
IMPLEMENTED ON OR ABOUT 22 NOV 1967.*

STATINTL



STATINTL



cc to

STATINTL

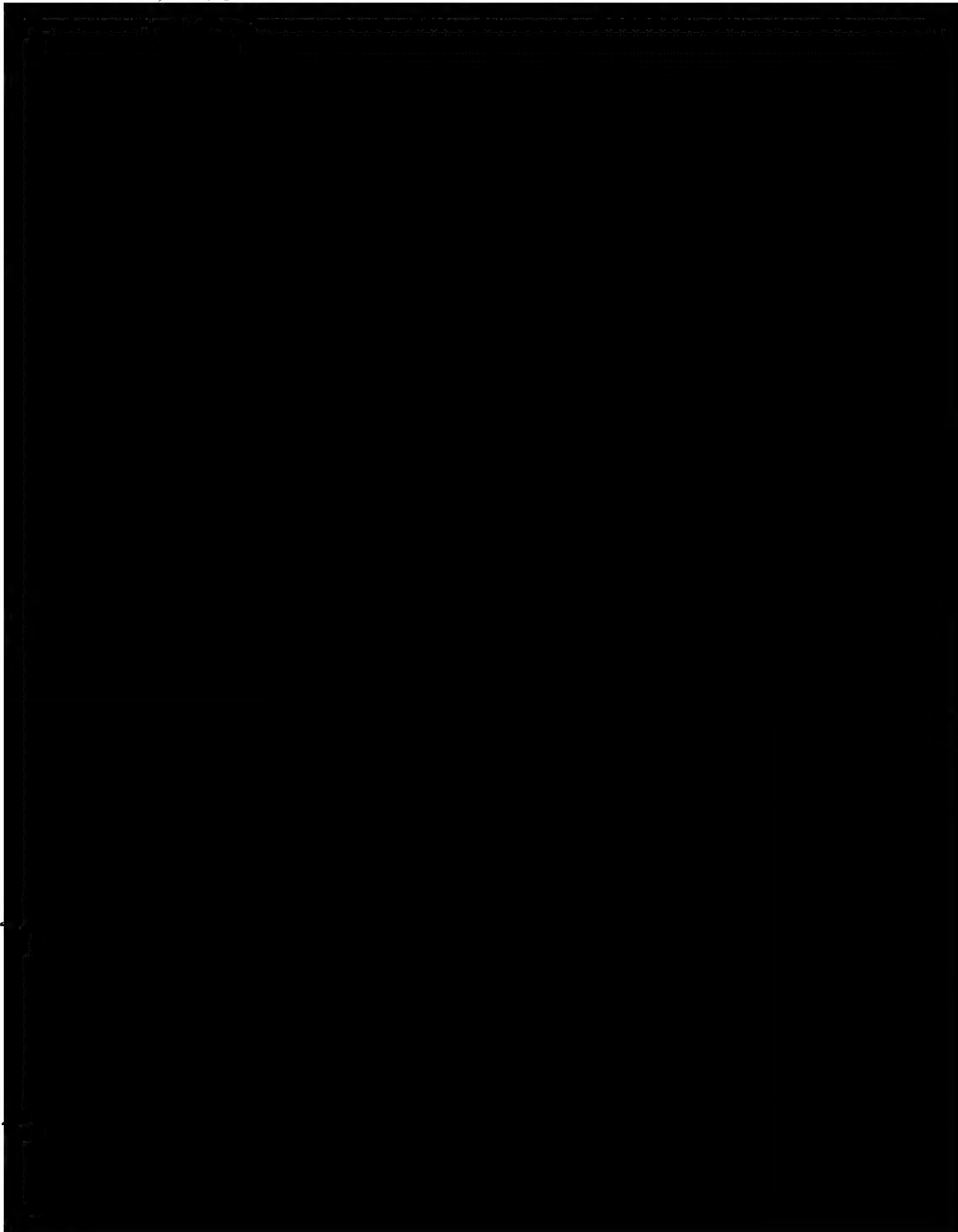
Approved For Release 2000/06/16 : CIA-RDP78B04747A000800010003-0


STATINTL

30 Dec 67

FSOS.

*Chip Processor*  
Rec'd CHIP MAGAZINE & FILM HOLDER PLUS LOADER FROM



DK-50 B is a  
modified DK-50  
formula proprietary  
to 

STATINTL

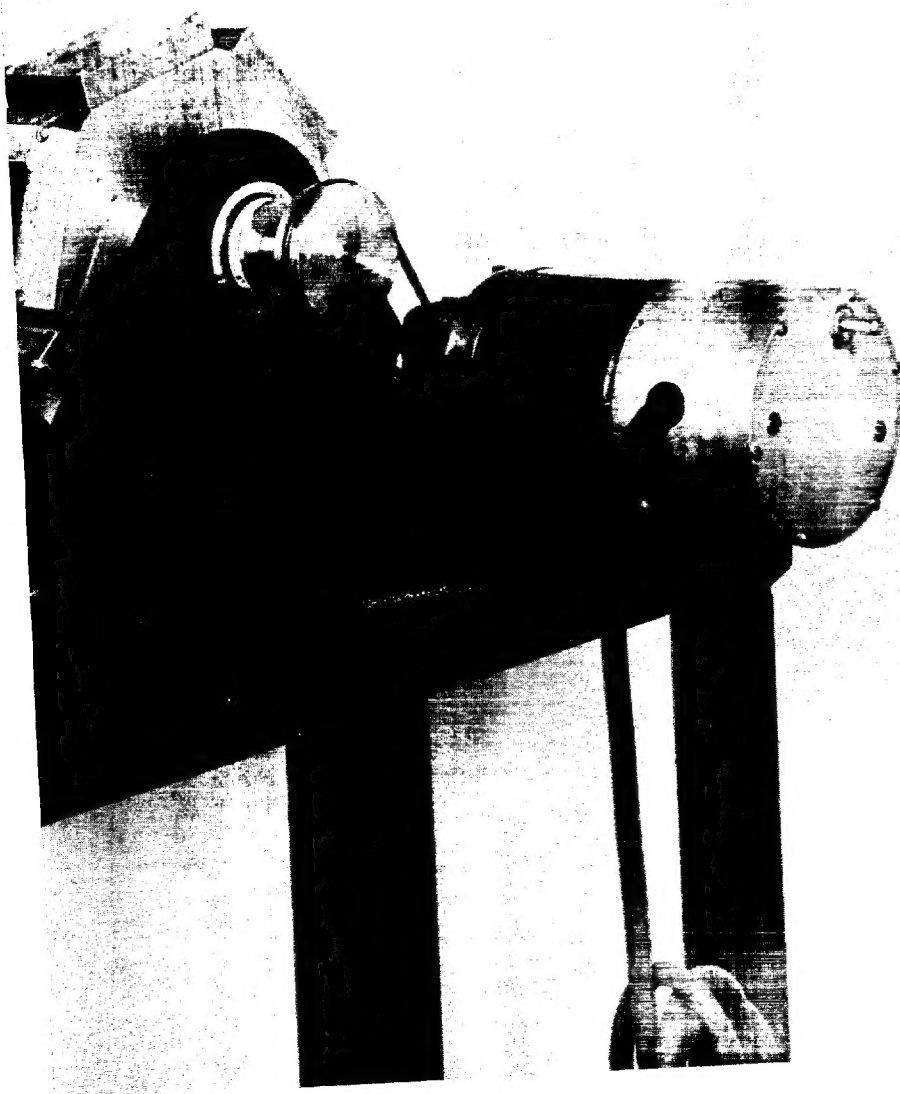
It is presently under  
in-house testing and  
evaluation for replenisher  
studies

STATINTL



P.S. Is this fast enough  
for you?

Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0



Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0

**STATINTL**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**Next 2 Page(s) In Document Exempt**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

STATINTL

11 Dec 67

Running temperature check on dev tank. Starting with cold water at  $57^{\circ}\text{F}$  making a recording every hour.

Room temp at 1100 was  $28^{\circ}\text{C}$  ( $82^{\circ}\text{F}$ ) machine has been running 2 1/2 hrs. at this time.

1130 - Room temp  $29^{\circ}\text{C}$  ( $84.2^{\circ}\text{F}$ ) Pump area  $79^{\circ}\text{F}$  thermo located mid way of pumps and below.

1230 - Room temp  $29^{\circ}\text{C}$  ( $84.2^{\circ}\text{F}$ ) Pump area -  $79^{\circ}\text{F}$

1315 - Temp in pump area was  $80^{\circ}\text{F}$  moved thermo up to the heat exchanger outlet.

1330 - Room temp.  $28^{\circ}\text{C}$  ( $84^{\circ}\text{F}$ )

The air outlet at end of machine is  $59^{\circ}\text{C}$  ( $138^{\circ}\text{F}$ )

Dryer outlet  $40^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ )

Air intake for dryer is  $35^{\circ}\text{C}$  ( $95^{\circ}\text{F}$ )

Temp inside pump area at the heat exchanger is  $140^{\circ}\text{F}$  approx.

Exhaust hose from both outlets might be an answer.

1430 - Room temp -  $84^{\circ}\text{F}$

Inside pump area with thermo hanging between two pumps -  $92^{\circ}\text{F}$

1530 - Room temp -  $84^{\circ}\text{F}$

Inside pump area -  $93^{\circ}\text{F}$

1630 - Room temp -  $84^{\circ}\text{F}$

Inside pump area -  $93^{\circ}\text{F}$  End of test day

**STATINTL**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**Next 4 Page(s) In Document Exempt**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**



CONFIDENTIAL

25 June 1968

MEMORANDUM FOR THE RECORD

SUBJECT: Measurement of Resolution Target Used in the Fairchild Chip Format Printer A.T.P.

1. There is a difference in the results obtained by Fairchild in the resolution tests which were part of the chip format printer ATP, and the resolution tests performed by [REDACTED] during the printer test and evaluation. STATINTL STATINTL STATINTL

2. [REDACTED] resolution test readings averaged [REDACTED] lines/mm when the test were performed with a 790 l/mm bar target of their own design.

3. Fairchild personnel recorded resolution readings averaging [REDACTED] lines/mm both during the printer ATP at the contractors plant, and also when the ATP was again performed at the time of equipment installation at Data Corporations Facilities. The targets used for the Fairchild ATP were the USAF 1951 configuration. These targets were furnished to the contractor by this facility. STATINTL

4. At my request, [REDACTED] sent me a sample film chip of the resolution target used for the ATP. I measured this target and found that its unit distance measurement was greater than that which was given in the USAF Resolution Chart specifications. The target was calculated to be a 1.1252 X enlargement of the standard 1951 resolution chart. Therefore, in order to obtain true results from the Fairchild ATP Readings, all values must be multiplied by a conversion factor of .88872. This results in a maximum average resolution reading of [REDACTED] /mm. STATINTL

CONFIDENTIAL

~~CONFIDENTIAL~~

SUBJECT: Measurement of Resolution Target Used in the Fairchild Chip Format  
Printer A.T.P.

25X1A



TPD/T&E/TSSG  
NPIC

Distribution:

Orig. -- NPIC/TPD/T&E (Contract file)  
1 -- NPIC/TSSG/DED (Stapleton)

CONFIDENTIAL

**25X1A**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**FINAL REPORT**

**TEST AND EVALUATION  
OF THE  
FAIRCHILD CHIP FORMAT PRINTER**

25X1A      by



**June 1968**

ABSTRACT

STATINTL

The purpose of this program is to evaluate the Fairchild Chip Format Printer, which is one of three items of photographic hardware referenced in [REDACTED] proposal no. 67-68, dated 4 April 1967. The test program was prepared and delivered to the customer. Primary areas investigated were: configuration of the equipment, electronic and peripheral equipment for search control, general engineering practices, repeatability with continual usage, and other operational phases in addition to photographic sensitometric evaluation. Engineers from Fairchild Camera and Instrument Company and [REDACTED] personnel installed the Chip Printer on 3 April 1968. It was concluded from the test results that the printer is unacceptable for operational use in its present configuration.

STATINTL

CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
I	INTRODUCTION . . . . .	1
II	EQUIPMENT . . . . .	2
	A. General Description . . . . .	2
	B. General Engineering . . . . .	3
III	TEST PROCEDURES AND RESULTS . . . . .	7
IV	CONCLUSIONS . . . . .	14

ILLUSTRATIONS

<u>Figure</u>	<u>Title</u>	<u>Page</u>
1a	Print Made From Unexposed Estar Base Cleared Film . . . . .	4
1b	Print Made From Same Film After Passing Through Dry Liquid Gate . . . . .	4
2a	Sample Print From Abraised Estar Base Film (Dry Liquid Gate ) . . . . .	10
2b	Sample Print From Same Film Using Lower Liquid Gate Only . . . . .	10
2c	Sample Print From Same Film Using Upper and Lower Liquid Gates . . . . .	11
3	Sensitometric Results of Error In Film Selector . . . . .	13

## SECTION I

### INTRODUCTION

The Fairchild Chip Format Printer has been under development for more than three years. Over this period of time, changes in the state-of-the-art of photography, electronics, and engineering, has created some problem areas that are apparent in the equipment in its present configuration.

It is unknown, even at this date, if the original concept is feasible, or if a requirement still exists for a printer of this design. Though mechanically well-constructed, some of the components must be modified and some operating procedures must be revised before the printer can be considered a suitable operational item.

STATINTL

This report covers a period of twelve weeks of tests and evaluations. Both Fairchild's Test Procedures, and the [REDACTED] Test and Evaluation Program were used to determine the printer's capabilities when operating in accordance with the Fairchild Manual. In addition to the foregoing programs, further testing of sensitometric functions and photographic quality were included.

Since the Chip Format Printer was a prototype, it had no standards for comparison in the engineering design phase. Therefore, the final results can only indicate how well it performs over a period of time within broad statistical limits. It is not possible to determine the compatibility of the machine with a specific system.

The following sections describe the equipment, installation, and the results of the tests.



## SECTION II

### EQUIPMENT

#### A. GENERAL DESCRIPTION

The contact Chip Printer was designed to produce high resolution photographic images on 4 x 5-inch cut film. Two image sizes were provided (55 x 95-mm, and 80 x 95-mm) so that the operator or analyst could have a choice of coverage commensurate with film size (70-mm to 9.5-inch). The selected sizes provided sufficient space for the Teletype and Data Block Information. This information is in alphanumeric and digital character form and is exposed on the chip by Data Block Generator for retrieval information. Part of the generator includes a smaller unit for classification information using interchangeable inserts consisting of ten classifications on each unit.

The Chip Printer consists of three basic units: (1) the Teletype for the analyst or operator to feed all pertinent information into the generator; (2) the Electronic Console, which contains the power supply, vacuum air controls, memory system, and the liquid gate supply tank; and (3) the Chip Printer body, which contains all mechanical components, including servo positioning mechanisms, exposure controls, film supply and chip holder magazine, liquid gate (optional) and main control panels

The control panel assemblies consist of master power control switches, indicator lights, positioning controls (manual override), positioning digitizer panel for Teletype input, and other indicators pertaining to film capacities, magazine and chip content, also fail safe lights for air and vacuum which are necessary for proper sequential operation of the system.

A generalized operational description of the system in relation to the units described is as follows. the Teletype, to be used by either the analyst or the operator, generates the tape with the necessary data block information. This information includes the initial starting point, established by the analyst, and subsequent positioning of areas of interest within a 25-inch x-axis area, y-axis (0-10 inches), and  $\theta$  azimuth (0-370 degrees).

per area, geographical coordinates, proper names, and any other information desired for future reference.

**B. GENERAL ENGINEERING**

No defects were discovered in the mechanical parts or mechanical operation, and the printer appeared to be constructed, with a few exceptions, according to good engineering practices.

All controls for operation were checked in accordance with the Fairchild manual, and functioned properly, including the air and vacuum supply lines and gauges.

**NOTE**

STATINTL

It was agreed that the equipment was received at [REDACTED] in the same condition as shipped from Fairchild Space Defense Systems in New York. The Fairchild engineers and technicians had complete control and operation of the machine until released to Data as satisfactory.

STATINTL

1. Film Transport and Handling: Upper and lower film transport systems are



Chip holder dimensions are critical, as noted throughout the testing. The use of selected holders by the Fairchild engineers was required during their testing. All chip holders will require machining for standardization.

Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0  
The take-off mechanism from the raw stock cassette requires daily cleaning, with additional cleaning required in proportion to machine usage. It was noted

FIGURE 1a

FIGURE 1b

**STATINTL**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**Next 8 Page(s) In Document Exempt**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

#### SECTION IV

#### CONCLUSIONS

STATINTL

All of the tests were run as scheduled, with the exception of approximately ten days of downtime. During those periods, varied problems were encountered that

constant maintenance in mechanical and electronic components by skilled technicians on a continuing basis in order to retain any semblance of an operational schedule.

Many of the tests that originally had been scheduled were not included, due to the lack of repeatability of the light source and the controls of the Automatic Exposure Control System.

It must be kept in mind that this printer is a prototype and susceptible to many areas of uncertainty in its operation. The concept of the machine and its basic intent for a specific program did present a challenge, and despite its complexity of design and construction is well engineered as a system.

As a result of all tests performed, it is concluded that the Fairchild Chip Format Printer is not acceptable as a production item of photographic hardware, but has established parameters for design criteria for future systems of this type. This does not preclude the possibility of its use as a research and development tool to utilize the servo-Teletype search sections.

**STATINTL**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0

**CERTIFICATION FOR**

**FREON<sup>®</sup>**

**Precision Cleaning Agent**

**and**

**SAFETY BULLETIN**

**enclosed**

Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0

Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0

### CERTIFICATION

We certify that when received by our customer the product in this container conforms to NASA Specification Number 237A and the following sales specifications.

1. Appearance .....Clear, colorless liquid
2. Boiling Point at  
Standard Barometric  
Pressure .....117.6°F. (47.6°C.)
3. Purity ....99.9% by wt., minimum (contains  
no more than 0.1% of other fluoro-  
carbons)
4. Residue (soluble plus insoluble)  
1 ppm by wt. maximum
5. Acid Number (mg. KOH/g. of sample)  
0.003 maximum
6. Chloride Ion .....0.1 ppm by wt. maximum
7. Moisture Content ..10 ppm by wt. maximum
8. Particulate Matter

Particle Size, (Microns)	Maximum number of Particles/100 ml.
25-100	100
> 100	10

STATINTL

Analytical Supervisor

Production Supervisor

Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0  
E. I. DU PONT DE NEMOURS & CO. (INC.)



**STATINTL**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**

**Next 19 Page(s) In Document Exempt**

**Approved For Release 2000/05/10 : CIA-RDP78B04747A000800010003-0**